

ABSTRACT

High-strength steel sheet excellent in hole-  
expandability and ductility, characterized by;  
5 comprising, in mass%, C: not less than 0.01 % and not  
more than 0.20 %, Si: not more than 1.5 %, Al: not more  
than 1.5 %, Mn: not less than 0.5 % and not more than 3.5  
%, P: not more than 0.2 %, S: not less than 0.0005 % and  
not more than 0.009 %, N: not more than 0.009 %, Mg: not  
10 less than 0.0006 % and not more than 0.01 %, O: not more  
than 0.005 % and Ti: not less than 0.01 % and not more  
than 0.20 % and/or Nb: not less than 0.01 % and not more  
than 0.10 %, with the balance consisting iron and  
unavoidable impurities, having Mn%, Mg%, S% and O%  
15 satisfying equations (1) to (3), and having the structure  
primarily comprising one or more of ferrite, bainite and  
martensite.

$$[\text{Mg}\%] \geq ([\text{O}\%] / 16 \times 0.8) \times 24 \quad \dots (1)$$

$$[\text{S}\%] \leq ([\text{Mg}\%] / 24 - [\text{O}\%] / 16 \times 0.8 + 0.00012) \times 32 \quad \dots (2)$$

$$20 \quad [\text{S}\%] \leq 0.0075 / [\text{Mn}\%] \quad \dots (3)$$